AD TORSE ADMINIT 14-1-11 AND PAPERS 1811 1811 - 1886 1972

Approved for public religions distribution salical. Mitable of least names in tale report does not constitute an official indorsement or approval of the use of rate alers. Believe this report when no longer reside. He not return to to the originator.

# **DISCLAIMER NOTICE**

THIS DOCUMENT IS BEST QUALITY PRACTICABLE. THE COPY FURNISHED TO DTIC CONTAINED A SIGNIFICANT NUMBER OF PAGES WHICH DO NOT REPRODUCE LEGIBLY.

OR are
Blank pgs.
Hhat have
Been Removes

BEST AVAILABLE COPY

_ U	n	$c_{\rm I}$	45	S.	77	1	e	3	_
٠.		i.	. c			fi.	~ •	.:	_

DOCUMENT CONTROL DATA - R & D							
(Security classification of title, body of abstract and indexing a ORIGINATING ACTIVITY (Corporate author)	ennotation must be e		overall report is classified) CURITY CLASSIFICATION				
		1					
US Army Natick Laboratories Natick, Massachusetts 01760		Unclassified					
natick, massachusetts 01700		ļ					
3. HÉPORT TITLE		<del></del>					
BIBLIOGRAPHY OF TECHNICAL PUBLICATIONS AN	ID PAPERS						
4. DESCRIPTIVE NOTES (Type of report and Inclusive dates)  July 1971 - June 1972							
5. AUTHORIS) (First name, mic@e initial, last name)	<del></del>	<del></del>					
,							
E. REPORT DATE	74. TOTAL NO. O	FPAGES	76. NO. OF BEFS				
July 1972	53		403				
44. CONTRACT OR GRANT NO.	SS. ORIGINATOR"	REPORT NUM	SER(\$;				
	73.	1-TL					
b. PROJECT NO.							
c.	ON OTHER REPOR	RT NOIS) (Agy of	ther numbers that may be aseigned				
	this report)						
d.	1						
10. DISTRIBUTION STATEMENT	<del></del>						
Approved for public release; distribution	n unlimated						
Approved for public release; discribation	. dillimited.						
		·					
11. SUPPLEMENTARY NOTES	12. SFONSORING	WILITARY ACTS	VITY				
	US Army Natick Laboratories						
	Natio	Natick, Massachusetts 01760					
13. ABSTRACT	<del></del>	<del></del>					
	lications and	l mamage he	, the personnel				
A cibliographic listing of technical public of the US Army Patick Laboratories and it	ts contractor	rs for the	neriod inly 1971				
through June 1972.	es concrecco.	is for the	period dary 1771				
Enrough June 1772.							
			· ·				
			j				
112							
] [							

REPLACES DO FORM 1478, 1 JAN 64, WHICH IS OBSOLETE FOR ARMY USE.

Unclassified
Security Classification

## Unclassified

expected to the constitution of the state of

3. 2. B. W. 1. 3. W.

we will be a server or remove the first of the server of t

Unclassified Security Classification								
14 KEY WORDS			LINK A LINK &			LINK C		
		ROLE	wT	ROLE	wT	ROLE	WT	
Research Reports Publications Development Army Natick Laboratories Bibliographies				<del> </del>		<del></del>		

a service of the following of the first of the first of the following of t

A 185 and a Newton of a collection of

AD	

TECHNICAL REPORT

73-1-TL

BIBLIOGRAPHY OF TECHNICAL PUBLICATIONS AND PAPERS

July 1971 - June 1972

Reports Control Symbol: XRE-RTL-100

And the self of the contesting and selecting the selection of the selectio

July 1972

U.S. ARMY NATICK LABORATORIES Natick, Massachusetts 01760

#### **FOREWORD**

This bibliography is a list of technical publications and papers by personnel of the U.S. Army Natick Laboratories and its contractors for the period July 1971 through June 1972. The arrangement is by organizational elements. In the instance where an article was prepared jointly by personnel of more than one laboratory, the reference is listed under each of the laboratories involved.

Feprints of journal articles, in some cases, are available from the individual authors. Copies of technical reports may be obtained from '1) the Defense Documentation Center, Cameron Station, Alexandria, Virginia 22314, or (2) the National Technical Information Service, Springfield, Virginia 22151. The 'AD" number should be cited when ordering copies of reports. Those reports marked with an asterisk (\*) are not available for distribution outside the agencies of the U.S. Government. Technical papers refer to presentations for which no printed copies exist.

Technical Library

CON CONTRACTOR OF THE STATE OF

# Contents

	Page
Office of the Commanding General	1
Deputy Commander	2
Office of Scientific Director	3
Operations Research and Systems Analysis Office	5
Quality Assurance and Engineering Office	7
Technical Library	8
Airdrop Engineering Laboratory	9
Clothing and Personal Life Support Equipment Laboratory	11
Food Laboratory	15
General Equipment and Packaging Laboratory	29
Pioneering Research Laboratory	33
Index to authors	49

# ABSTRACT

A bibliographic listing of technical publications and papers by the personnel of the U.S. Army Natick Laboratories and its contractors for the period July 1971 through June 1972.

## U.S. ARMY NATICK LABORATORIES

## OFFICE OF THE COMMANDING GENERAL

## Technical Papers

 VAN LYDEGRAF, D. Graduation address. Quartermaster Officer Basic Class 71-9, U.S. Army Quartermaster School, Fort Lee, Va., 2 July 1971. minimum de value de de la la de la constante de la la la de la la la de la la desta de la desta de la desta de

- LEVIN, W. B. Address. Topic of George Washington, Masons of Sudbury, Wayside Inn, Sudbury, Mass., 22 February 1972.
- 3. Memorial Day address. Memorial Day Observance,
  Town of Natick, Mass., 29 May 1972.

## DEPUTY COMMANDER

# Technical Papers

4. MICHL, M. B. Military careers and the operation of Natick Laboratories. Business and Professional Women's Club of Sudbury, Holiday Inn, Marlborough, Mass., 19 January 1972.

#### OFFICE OF SCIENTIFIC DIRECTOR

## Journal Articles

- 5. ANDERSON, E. E. Feeding the military man. Army Logistician, 4(2):8-11, 33 (1972).
- 6. ROSS, E. W., JR. A general theory of parachute opening. J. Aircraft, 9(4):257-258 (1972).

## Technical Papers

- 7. ANDERSON, E. E. U.S. Dept. of Defense food research and exploratory development program. 10 Nation Meeting on Foods for the Armed Forces, Oslo, Norway, 5-11 March 1972.
- 8. FLANAGAN, J. H. Engineering a time for change. U.S. Army Materiel Command Intern Training Center, Red River Army Depot, Texarkana, Tex., 26 August 1971.
- 9. Introductory address. Value Engineering Orientation Meeting, U.S. Army Natick Laboratories, Natick, Mass., 15 February 1972.

Hom sometimes that the sometimes and the sometimes of the

- 10. Panel member. Value Engineering Executive Seminar, U.S. Army Natick Laboratories, Natick, Mass., 12 April 1972.
- 11. NLABS engineering program. House Appropriations
  Committee, U.S. Army Natick Laboratories, Natick, Mass.,
  15 May 1972.
- Seminar, U.S. Army Nation Test and Evaluation Management 16 May 1972.
- 13. POPE, R. E. The DOD food program. USAF Veterinary Symposium, USAF School of Health Care Sciences, Sheppard AFB, Wichita Falls, Tex., 23 March 1972.
- 14. ROSS, E. W., JR. Extreme-value theory in radiation sterilization of food. 17th Conference on the Design of Experiments in Army Research, Development and Testing, Walter Reed Army Institute of Research, Washington, D.C., 28 October 1971.

#### OFFICE OF SCIENTIFIC DIRECTOR

# Technical Papers (continued)

- 15. ROSS, E. W., JR. Probability theory in radiation-sterilization of food. 18th Conference of Army Mathematicians, Picatinny Arsenal, Dover, N.J., 25 May 1972.
- 16. SIELING, D. H. What happened in the DOD food ROTE program a review - 1970 to 1972. National Academy of Sciences-National Research Council General Committee on DOD Food Program, U.S. Army Natick Laboratories, Natick, Mass., 29 February 1972.

The The Control of th

#### OPERATIONS RESEARCH AND SYSTEMS ANALYSIS OFFICE

## Technical Reports

- 17. BYRNE, R. J., R. S. SMITH, R. L. BUSTEAD, and J. K. PRIFTI. A cost analysis of modern high production food systems for military garrison applications. 72-67-OR&SA, May 1972.
- 18. CRAMER, R. W., and R. S. SMITH. A qualitative evaluation of the environment and modernization potential of dining halls at Fort Lewis, Washington. 72-56-OR&SA, February 1972 (AD 740 750).
- 19. HERTWECK, G., and R. J. BYRNE. An analysis of consumer responses to proposed changes in army garrison feeding system at Fort Lewis, Washington. 72-48-OR&SA, January 1972 (AD 739 908).
- 20. SMITH, R. S., R. L. BUSTEAD, J. K. PRIFTI, and C. CHANG. An evaluation of selected advanced high production feeding systems. 72-47-0R&SA, February 1972 (AD 739 502).
- 21. \_\_\_\_\_\_, R. J. BYRNE, J. E. ROGOZENSKI, R. L. BUSTEAD, J. K. PRIFTI, and J. WOLFSON. A system evaluation of army garrison feeding at Fort Lewis, Washington. 72-37-OR&SA, January 1972 (AD 738 148).

# Journal Articles

- 22. BYRNE, R. J. Feeding systems studies. Activities Report, 24(1): 65-66 (1972).
- 23. SMITH, R. S. The Army's new CAFe. Cornell Hotel and Restaurant Administration Quarterly, 13(1):76-81 (1972).

#### Technical Papers

- 24. BYRNE, R. J. Central garrison feeding system at Fort Lewis.

  Society for Advancement of Food Service Research, Warren,

  Vt., 18 October 1971.
- 25. The problem, plan and results of the central food preparation for garrison feeding the Fort Lewis experiment. R&D Associates for Military Food and Packaging Systems, Inc., Natick, Mass., 19 October 1971.

#### OPERATIONS RESEARCH AND SYSTEMS ANALYSIS OFFICE

## Technical Papers (continued)

See a second of the second of

- 26. BYRNE, R. J. NLABS feeding system studies. Defense Supply Association, Washington, D.C., 27 October 1971.
- 27. Fort Lewis feeding system experiment. Pentagon Press Conference, Washington, D.C., 16 November 1971.
- New army garrison food service system. Army Scientific Advisory Panel, Fort Lewis, Wash., 7 February 1972.
- Central army feeding systems (CAFe). Food Update 11, Meeting, Food & Drug Law Institute, Key Biscayne, Fla., 18 April 1972.
- LEITCH, D. P. Military feeding systems Fort Lewis experiment. International Food Service Marketing Association, Chicago, Ill., 19 May 1972.
- 31. SMITH, R. S. The systems approach to military feeding. 11th Annual Food Facility Conference, Ithaca, N.Y., 15 November 1971.
- 32. Fort Lewis centralized feeding system experiment. World-Wide Food Service Seminar, Fort Lee, Va., 18 January 1972.
- A prototype modern food service system for Fort
  Lewis, Wash., National Research Council Committee on DOD Food
  Program, Natick, Mass., 29 February 1972.
- A systems analysis study of military food service operations. Air Force Medical Food Service Officer Symposium, Sheppard AFB, Tex., 10 April 1972.
- 35. The Fort Lewis experiment and update. R&D Associates Annual Meeting, Chicago, Ill., 18 April 1972.

#### QUALITY ASSURANCE AND ENGINEERING OFFICE

## Technical Reports

- 36. ELWELL, R. A., and C. L. EKLUND. Composing system for technical reports. 72-65-QAEO, June 1972.
- 37. \_\_\_\_\_, and C. L. EKLUND. Standardization program, document preparation system. ?2-39-QAEO, February 1972.

## Journal Articles

38. ANELLIS, A., and S. J. WERKOWSKI. Estimation of an equivalent "12D" process by the normal distribution method. Can. J. Microbiol., 17(9):1185-1187 (1971).

## Other Publications

39. SHIMKUS, D. F. Instructions for preparing coordinated test programs. NLABS Pamphlet, March 1972.

## TECHNICAL LIBRARY

# Technical Reports

 Bibliography of technical publications and papers: July 1970 -June 1971, U.S. Army Natick Laboratories. 72-1-TL, July 1971 (AD 730 322).

#### AIRDROP ENGINEERING LABORATORY

#### Technical Reports

- 41. FUKA, L. R. Buckling of cylindrical shells subjected to axial loading. Engineering Mechanics Research Laboratory, University of Texas at Austin, Contract No. DAAG-17-70-C-0127. 72-50-AD, September 1971.
- 42. GIEBUTOWSKI, E. J. A discussion of the applicability of parachutes with pulled down vents for airdrop of supplies and equipment at 500-foot altitude. 72-23-AD, October 1971.
- 43. JAN, S. F. Impact on complex mechanical structures. Engineering Mechanics Research Laboratory, University of Texas at Austin, Concract Po. DAAG-17-70-C-0127. 72-49-AD, July 1971.
- 44. JEZEK, B. W., and K. E. MUELLEF Low altitude airdrop system investigation employing inflation-aided recovery parachutes for extraction. AAI Corporation, Contract No. DAAG-17-68-C-0035. 72-15-AD, October 1971 (AD 735 375).
- 45. MAIRE, R., and R. D. WELLS. Engineering evaluation of age life extension, T-10 harnesses, risers and T-10 troop chest reserve parachute canopies. 72-59-CE (TS-183), March 1972 (AD 742 668).
- 46. SHUTE, S. J. A review of high-glide personnel parachutes and their potential for military airborne operations. 72-14-AD, August 1971.

#### Journal Articles

47. DAVIES, J. M., and W. ZAGIEBOYLO. Electron irradiation of dilute aqueous solutions of polymers over a range of temperatures. Int. J. Appl. Radiat. Isotop., 22(9):521-528 (1971).

#### Technical Papers

48. BARNICLE, E. J. U.S. Army sur ival kits. Meeting, Quadripartite Working Group on Anny Aviatic Equipment, Fort Eustis, Va., 23 February 1972.

#### AIRDROP ENGINEERING LABORATORY

# Technical Papers (continued)

and the second of the second o

- 49. CUNNIFF, T. L. A presentation of U.S. Army airdrop R&D activities. 1971 Meeting, Air Transport Working Party, NATO, (MAS), Brussels, Belgium, 2-12 November 1971.
- 50. Highlights of U.S. Army airdrop program. Presented by USAMC at 19th Meeting, Air Standardization Coordinating Committee Working Party 44, Canberra, Australia, 8-22 March 1972.

#### CLOTHING AND PERSONAL LIFE SUPPORT EQUIPMENT LABORATORY

# Technical Reports

- 51. BERNARD, A. M. Thermoelectric heating and ventilating system. Westinghouse Electric Corporation, Contract No. DAAG-17-70-C-0044. 72-26-CE (C&PLSEL-91), November 1971 (AD 737 720).
- 52. BUCNS, F. C., G. DIAS, and H. D. HOGAN. Feasibility study to determine the fluorine content in quarpel-treated fabrics by analysis with a 14 MeV neutron activation source. U.S. Army Materials and Mechanics Research Center and U.S. Army Natick Laboratories. 72-35-CE (TS-181), March 1972 (AD 744 439).
- 53. CHURCHILL, E., J. T. MCCONVILLE, L. L. LAUBACK, and R. M. WHITE.
  Anthropometry of U.S. Army aviators 1970. Anthropology Research
  Project, Yellow Springs, O. and U.S. Army Natick Laboratories,
  Contract No. DAAG-17-70-C-0055. 72-52-CE (C&PLSEL-95),
  December 1971 (AD 743 528).

المحافظ المحافظ المحاف ومريط ومواط ماموه والمراقدة المحافظة المحافظة والمحافظة والمحافظة المحافظة المح

عواسيانيا والمها والموافقة والمقافة والمحافظة والمحافظة والمعاشية والماسانية والمسارة والمراج والمسارة كالمراح والمفاولة ووا

- 54. FOURT, L., and N. R. S. HOLLIES. Reflectance properties of fabrics in relation to detection by a night vision device. Harris Research Laboratories, Contract No. DAAG-17-70-C-020L 72-30-CE (TS-180), October 1971 (AD 894 539)\*.
- 55. HERZ, M. L. Computer correction of spectrophotometric data. 72-62-CE (C&PLSEL-97), May 1972 (AD 745 126).
- 56. Evaluation of reaction rates by computer methods. 72-38-CE (C&PLSEL-93), November 1971.
- 57. MAHONEY, P. J. Investigation of methods for improving the frictional properties of rubber compounds used in footwear. 72-2-CE C&PLSEL-88), July 1971 (AD 733 312).
- 58. MAIRE, R., and R. D. WELLS. Engineering evaluation of age life extension, T-10 harnesses, risers and T-10 troop chest reserve parachute canopies. 72-59-CE (TS-183), March 1972 (AD 742 668).
- 59. MAZZEO, R. A. Lightweight insulated footwear. Uniroyal, Inc., Contract No. DAAG-17-70-C-0003. 72-9-CE (C&PLSEL-92), September 1971 (AD 734 934).
- 60. NAUMER, D. A., and R. RITTER. Ventilating backpack for the suit system, toxicological protective, micro-climate controlled (CB Protective System for EOD personnel). 72-61-CE (C&PLSEL-96), January 1972.

#### CLOTHING AND PERSONAL LIFE SUPPORT EQUIPMENT LABORATORY

## Technical Reports (continued)

- 61. STAPLER, J. T., and J. BORNSTEIN. Novel synthesis of "di-iso-indoline", a new hexahydrobenzodypyrrole monomer. 72-17-CE (C&PLSEL-90), November 1971 (AD 743 466).
- 62. WEINER, L. I. Crimp and thickness relationships in maximum weavable fabrics. 72-45-CE (TS-182), March 1972 (AD 74Q 161).
- 63. Fabric design handbook. 72-21-CE (TS-179),

  January 1972 (AD 738 581).
- 64. WHITE, R. M., and E. CHURCHILL. The body size of soldiers, U.S. Army anthropometry 1966. U.S. Army Natick Laboratories and Anthropology Research Project, Yellow Springs, O. 72-51-CE (C&PLSEL-94), December 1971 (AD 743 465).

#### Journal Articles

1、1、日本三年茶の苦寒といります。

9

ć

- 65. ARONS, G. N., and R. N. MACNAIR. Activated carbon fiber and fabric achieved by pyrolysis and activation of phenolic precursors.

  Text. Res. J., 42(1):60-63 (1972).
- 66. DAVIDSOHN, W., B. R. LALIBERTE, C. M. GODDARD, and M. C. HENRY. Organometallic bis(p-hydroxyphenyl) derivatives of group IV elements and related compounds. J. Organometal. Chem., 36(2): 283-291 (1972).
- 67. ERICKSON, R. L., R. N. MACNAIR, R. H. BROWN, and H. D. HOGAN.

  Determination of bis(2-chloroethyl)sulfide in a dawson apparatus
  by gas chromatography. Anal. Chem., 44(6):1040-1041 (1972).
- 63. FIGUCIA, F., L. WEINER, and R. LAIBLE. The mechanical properties of textile materials as influenced by complexity and rate of testing. Polym. Eng. Sci., 11(4):289-294 (1971).
- 69. FLORES, L., and F. JONES. Physico-thermal stabilities of dye solids. I. Heat capacities of some disperse and vat dyes. J. Soc. Dyers Colour., 87(9):304-309 (1969).
- 70. FREDERICK, E. B., and M. C. HENRY. A study of seam leakage in coated fabrics. J. Coated Fibrous Materials, 1(1):18-29 (1971).

## Journal Articles (continued)

- 71. HEALY, E. M., A. O. RAMSLEY, and B. A. NATSIOS. Polyelectrolyte effect and conformational transition in a restricted polyacid structure. J. Appl. Polym. Sci., 16(1):37-40 (1972).
- 72. JONES, F., and L. FLORES. Physico-thermal stabilities of dye solids. II. Phase transitions and melting behavior of some disperse and vat dyes. J. Soc. Dyers Colour., 88(3).101-106 (1972).
- 73. NORTHERN NEW ENGLAND SECTION of American Association of Textile Chemists and Colorists. Weathering degradation of nylon. Text. Chem. Color., 4(2):57-61 (1972).
- 74. PROSSER, R. A., and J. T. STAPLER. Protection against intense light.
  11. The role of the gaseous decomposition products. J. Appl.
  Polym. Sci., 16(3):573-583 (1972).
- 75. Protection against intense light. III. The use of commercial dyes in thermal protection. J. Appl. Polym. Sci., 16(4):871-883 (1972).
- 76. SELIGSBERGER, L. A versatile method for measuring the water vapor absorption of leather and other sheet materials. J. Amer. Leather Chem. Ass., 67(2):52-58 (1972).
- 77. WEINER, L. I. The wear of cotton fabrics. Textilis, 27:9 (1971).
- 78. WILSON, A., and P. MAHONEY. Measuring frictional properties of soles and heels. Rubber World, 16\_(6):36-37 (1972).

#### Technical Papers

- 79. KENNEDY, S. J. Interaction of military and industry research and development. American Association of Textile Chemists and Colorists, Golden Jubilee Conference, Boston, Mass., 8 October 1971.
- 80. LAIBLE, R., F. FIGUCIA, and W. FERGUSON. The application of high modulus fibers to ballistic protection. American Chemical Society, Division of Polymer Chemistry, Boston, Mass., 13 Apri' 1972.

#### CLOTHING AND PERSONAL LIFE SUPPORT EQUIPMENT LABORATORY

- 81. RIZZO, F. J. Research on textiles with specific emphasis on durable press and cotton type textiles. 12th Cotton Utilization Research Conference, Southern Marketing and Nutrition Research Division, U.S. Department of Agriculture, New Orleans, La., 11 May 1972.
- 82. STAPLER, J. T., and J. BORNSTEIN. High temperature polyamides from hexahydrobenzodipyrrole monomers. Army Science Conference, West Point, N.Y., 20-23 June 1972.
- 83. WHITE, R. M. Anthropometry and human factors engineering. Symposium on Natural and Cultural Variables in Human Factors Engineering (Ergonomics), sponsored by North Atlantic Treaty Organization, Advisory Group on Human Factors, Oosterbeek, The Netherlands, 19-23 June 1972.
- 84. WILSON, A. Evaluation of the friction of sole and heel compounds, Elastomers and Plastics Group, Northeastern Section American Chemical Society, Waltham, Mass., 16 May 1972.

#### Technical Reports

- 85. BROWN, C. L., H. W. SHAFER, and J. M. TUOMY. Effect of freeze-drying conditions on the quality of raw perk. 72-41-FL (FL-149), February 1972 (AD 739 496).
- 86. CARLIN, A. F. Development of cooking procedures and recipes for using irradiation sterilized meats. Iowa State University, Contract No. DA-19-129-AMC-227(N). 72-31-FL (FL-72), January 1972 (AD 736 845).
- 87. GOULD, J. W., J. T. PERRY, JR., and E. M. KENYON. Microwave applications to freeze dehydration preliminary evaluation of a 2450MHz system. 72-24-FL (FL-146), February 1972 (AD 738 149).
- 88. HARLAN, J. W., and F. L. KAUFFMAN. Irradiation studies on meat.

  Swift and Company, Contract No. NLABS (Natick) No. 172. 72-32-FL

  (FL-73), January 1972 (AD 736 360).
- 89. HARRIS, N. E., D. E. WESTCOTT, R. A. SEGARS, and J. G. KAPSALIS.

  Study of the use of a corn flake crumb matrix for corn flake bar, survival type. 72-13-FL (FL-141), August 1971 (AD 733 947).
- 90. HELMER, R. L., and J. M. TUOMY. Effect of cooking and fat level on the oxygen uptake of freeze-dried cooked ground beef. 72-54-FL (FL-150), December 1971.
- 91. JARVI, P. K., C. A. OVERLEY, and J. W. ROBERTSON. Study of fat stability and shelf life of canned margarine. Swift and Company, Contract No. DAAG-17-69-C-0201. 71-34-FL (FL-125), March 1971 (AD 727 669).
- 92. MACKENZIE, A. P., and B. J. LUYET. Recovery of compressed dehydrated foods, phase II. American Foundation for Biological Research, Contract No. DAAG-17-67-C-0126. 72-33-FL (FL-148), December 1971 (AD 737 315).
- 93. POLLOCK, W. B. Observations on the occurrence of a dermatomy-cosis in a colony of Long-Evans rats. 72-69-FL (FL-160), May 1972 (AD 744 440).

## Technical Reports (continued)

- 94. PORTER, W. L., and A. GREENWALD. The analysis of high temperature occurrences at selected internal and surface locations in food storage dumps and isolated small cartons at Yuma, Arizona. 71-59-FL (FL-132), January 1971 (AD 736 359).
- 95. \_\_\_\_\_\_, and A. GREENWALD. Comparison of the occurrence of high temperatures in air and food in boxcars in desert and humid subtropical climates Yuma, Arizona and Cameron Station, Virginia. 71-55-FL (FL-131), January 1971 (AD 732 845).
- 96. \_\_\_\_\_, and A. GREENWALD. Temperature distribution and effects of insulation and night-time ventilation in an Army ware-house. 71-49-FL (FL-130), January 1971 (AD 728 821).
- 97. PRATT, G. B., and L. E. KNEELAND. Irradiation induced headspace gases in packaged radiation sterilized food. American Can Company, Contract No. DA-19-129-AMC-119(N). 72-55-FL (FL-158), February 1972 (AD 741 787).
- 98. RAHMAN, A. R., G. SCHAFER, P. PRELL, and D. E. WESTCOTT. Non-reversible compression of intermediate moisture fruit bars. 71-60-FL (FL-137), July 1971 (AD 728 820).
- 99. , G. SCHAFER, T. J. DINICOLA, and D. E. WESTCOTT. Shelf life of tomatoes as affected by a post harvest treatment and storage conditions. 72-74-FL (FL-165), June 1972 (AD 746 254).
- 100. RONSIVALLI, L. J. Development of radiation sterilized fish items. U.S. Department of Interior, Bureau of Commercial Fisheries, Project Order No. 66-88. 72-42-FL (FL-153), February 1972 (AD 739 497).
- 101. ROWLEY, D. B., J. M. TUOMY, and D. E. WESTCOTT. Fort Lewis experiment. Application of food technology and engineering to central preparation. 72-46-FL (FL-157), February 1972 (AD 739 499).
- 102. SALUNKHE, D. K., B. SINGH, C. C. YANG, and D. J. WANG. Controlled atmosphere storage of lettuce. Utah State University, Contract No. DAAG-17-69-C-0196. 72-18-FL (FL-143), October 1971 (AD 740 815).

たいれいしょう ちゃかい かんけい スタッカ かんしゅう しゅうしゅう しゅうしゅう しゅうしゅう しゅうしゅう しゅうしゅう しゅうしゅう しゅうしゅう

# Technical Reports (continued)

- 103. SWIFT, J. Controlled environment facility for development of military rations. 71-38-FL (FL-127), January 1971 (AD 727 671).
- 104. TUOMY, J. M. Development of reversibly compressed freeze-dried foods for use in individual ration packets. 72-4-FL (FL-135), June 1971 (AD 731 483).
- Freeze drying of foods for the armed services.

  72-28-FL (FL-145), October 1971 (AD 737 606).
- 106. WALKER, G. C., E. A. BRADEN, C. L. HICKS, and J. M. TUOMY. Factors affecting the quality of procurement grade shell eggs. 72-11-FL (FL-138), May 1971 (AD 733 315).
- 107. WELLS, F. E. Biodetection of microbial contamination in processed foods: The potential for development of odorous excretory materials in animals fed rations containing pyridine-n-oxides. Midwest Research Institute, Contract No. DAAG-17-70-C-0159. 72-12-FL (FL-140), August 1971 (AD 733 311).

### Journal Articles

- 108. AGARWAL, S. R., F. HEILIGMAN, and E. M. POWERS. Comparison of precooked irradiated chicken and lamb without and with partial dehydration. J. Food Sci., 37(3):469-472 (1972).
- 109. ANELLIS, A., and S. J. WERKOWSKI. Estimation of an equivalent "12D" process by the normal distribution method. Can. J. Microbiol., 17(9):1185-1187 (1971).
- 110.

  , D. BERKOWITZ, D. KEMPER, and D. B. ROWLEY. Production of types A and B spores of Clostridium botulinum by the biphasic method: Effect on spore population, radiation resistance, and toxigenicity. Appl. Microbiol., 23(4):734-739 (1972).
- 111. CLIFFORD, W., and A. ANELLIS. <u>Clostridium perfringens</u>. I. Sproulation in a biphasic glucose ion exchange resin medium. Appl. Microbiol., 22(5):856-861 (1971).

## Journal Articles (continued)

- 112 COHEN, J. S., and M. A. WALL. A method of calculating average sterilizing value in cylindrical containers. Trans. Amer. Soc. Agric. Eng., 14(2):329-333 (1971).
- 113. GOULD, J. W., and E. M. KENYON. Gas discharge and electric field strength in microwave freeze drying. J. Microwave Power, 6(2): 151-167 (1971).
- 114. HEILIGMAN, F., and L. J. RICE. Development of irradiation sterilized codfish cake. J. Food Sci., 37(3):420-422 (1972).
- 115. HOLLENDER, H. A., and M. V. KLICKA. Feeding man in space. Army Logistician, 3(6):24-27, 40 (1971).
- Planned R&D approach for feeding the Army 1985.

  Activities Report, 23(2):41-45 (1971).
- 117. JOHNSON, H. C., J. A. BAROSS, and J. LISTON. <u>Vibrio parahaemolyticus</u> and its importance in seafood hygiene. J. Amer. Vet. Med. Ass., 159(11):1470-1473 (1971).
- 118. KAPSALIS, J. G., R. A. SEGARS, and J. KRIZIK. An instrument for measuring rheological properties by bending. J. Texture Stud., 3:31-50 (1972).

LANGE OF THE CONTRACT OF THE PROPERTY OF THE P

- 119. MANDELS, M., J. KOSTICK, and R. PARIZEK. The use of adsorbed cellulase in the continuous conversion of cellulose to glucose. J. Polym. Sci., Part C, 36:445-459 (1971).
- 120. MURRMANN, R. P., R. W. WINTERS, and T. G. MARTIN. Determination of trace elements in soils and clay minerals by resonance neutron activation analysis. Soil Sci. Soc. of Amer. Proc., 35(4):647-651 (1971).
- 121. POWERS, E. M., C. AY, H. M. EL-BISI, and D. B. ROWLEY. Bacteriology of dehydrated space foods. Appl. Microbiol., 22(3):441-445 (1971).
- 122. RAHMAN, A. R., S. BISHOV, and D. E. WESTCOTT. Reversible compression of dehydrated peas. J. Texture Stud., 2(2):240-245 (1971).

# Journal Articles (continued)

- 123. RICE, L. J. Nuclear preservation of food. Outlook (Union Carbide), 2(4):1 (1971).
- 124. ROTH, J. S., T. LOSTY, and E. WIERBICKI. Assay of proteolytic enzyme activity using a <sup>14</sup>C-labeled hemoglobin. Anal. Biochem., 42(1):214-221 (1971).
- 125. SALUNKHE, D. K., Y. S. LEE, and A. R. RAHMAN. Quality evaluation of canned and freeze-dried applesauce. Food frod. Dev., 5(5):70-74 (1971).
- 126. SINGH, B., C. C. YANG, D. K. SALUNKHE, and A. R. RAHMAN.

  Controlled atmosphere storage of lettuce. 1 Effects on
  quality and the respiration rate of lettuce heads. J. Food Sc.,
  37(1):48-52 (1972).
- 127.

  Ontrolled atmosphere storage of lettuce. 2 Effect on biochemical composition of the leaves. J. Food Sci., 37(1):52-54 (1972).
- 128. SWIFT, J. NLABS opens clean room. Army R&D Mag., 13(2):42-43 (1972).
- 129. WALKER, G. C., E. A. BRADEN, C. L. HICKS, and J. M. TUOMY. The effect of position, storage time and shaking on the quality of shell eggs. Poultry Sci., 51(1):287-293 (1972).

#### Technical Papers

THE SECOND SECON

- 130. ANELLIS, A., and D. B. ROWLEY. Biphasic method for producing Clostridium botulinum spores. Interagency Botulism Research Coordinating Committee, Atlanta, Ga., 11-12 August 1971.
- 131. AYOUB, J. A., D. BERKOWITZ, E. M. KENYON, and C. K. WADSWORTH. Continuous microwave process - product processing and evaluation. Institute of Food Technologists, Minneapolis, Minn., 21-24 May 1972.
- 132. BISHOV, S. J., and A. S. HENICK. Antioxidant effect of protein hydrolyzates in a freeze-dried model system. Institute of Food Technologists, Minneapolis, Minn., 21-24 May 1972.

## Technical Papers (continued)

THE STATE OF THE PARTY OF THE P

- 133. BRANAGAN, M. T. Space foods. Cub Scouts, Brown School, West Natick, Mass., 25 April 1972; Margaret Neary School, Southboro, Mass., 23 May 1972.
- 134. BRANDT, D. A description of the enzymatic conversion of waste cellulose to glucose. Bedford High School, Bedford, Mass., 27 March 1972.
- 135. BROCKMANN, M. C., H. A. HOLLENDER, and M. V. KLICKA. Military R&D on foods: its spin off for meeting food needs in the developing world. Institute of Food Technologists, Minneapolis, Minn., 21-24 May 1972.
- 136. BRYNJOLFSSON, A. Factors influencing economic evaluation of irradiation processing. Joint FAO/IAEA Panel to Consider the Technological Factors Involved in the Application of Food Irradiation, Vienna, Austria, 14-18 June 1971.
- Physical factors pertaining to the use of electron accelerators for food irradiation. Joint FAO/IAEA Fanel to Consider the Technological Factors Involved in the Application of Food Irradiation, Vienna, Austria, '4-18 June 1971.
- 138. Shielding of electron accelerators. Joint FAO/
  IAEA Panel to Consider the Technological Factors Involved in
  the Application of Food Irradiation, Vienna, Austria, 14-18 June
  1971.
- On the theory of stopping of fast charged particles.

  Army Science Conference, West Point, N.Y., 20-23 June 1972.
- 140. DOMENICO, J. A., A. R. RAHMAN, and D. E. WESTCOTT. Shelf life of tomatoes affected by chemical treatment. Institute of Food Technologists, Minneapolis, Minn., 21-24 May 1972.
- 141. HARRIS, N. E., D. E. WESTCOTT, and A. S. HENICK. Rancidity in almonds: Shelf life studies. Institute of Food Technologists, Minneapolis, Minn., 21-24 May 1972.
- 142. HEILIGMAN, F., and E. WIERBICKI. Radappertized bacon a fiveyear storage study. Institute of Food Technologists, Minneapolis, Minn., 21-24 May 1972.

- 143. HOLLENDER, H. A. Advances in product development through military R&D. Institute of Food Technologists (Texas Section), College Station, Tex., 5 April 1972.
- 144. HONTZ, L. The conversion of cellulose to glucose by enzymatic hydrolysis. Lincoln-Sudbury Regional High School, Lincoln, Mass., 4 October 1971.
- 145. HSIA, S., T. R. PARKS, J. SIDEL, and A. R. RAHMAN. Effect of raw material variables and process conditions on the quality of stored freeze-dried fruits and air-dried lima beans. Institute of Food Technologists, Minneapolis, Minn., 21-24 1972.
- 146. HUBER, C. S., N. D. HEIDELBAUGH, M. C. SMITH, and M. V. KLICKA.

  Space foods. Symposium The Health Challenge of Foods, National
  College of Food Technology, Weybridge, Surrey, England, 18 March
  1972.
- 147. JARRETT, R. Radiation dosimetry at cryogenic temperatures using thermoluminescence. Third International Conference on Luminescence Dosimetry, Riso, Dent. 4, 11-14 October 1971.
- 148. JOHNSON, H. C., and J. LISTON. Sensitivity of vibrio parahaemolyticus to cold. Institute of Food Technologists, Minneapolis, Minn., 21-24 May 1972.
- 149. JOSEPHSON, E. S. Food radiation research programme of USA.

  Part 1. IAEA/FAO International Training Course on Food Irradiation Technology and Techniques, Trombay, Bombay, India, 6 December 1971; Part 2. 7 December 1971.
- Research in USA for acceptance and clearance of irradiated foods. IAEA/FAO International Training Course on Food Irradiation Technology and Techniques, Trombay, Bombay, India, 8 December 1971.
- Department of Biochemistry and Food Technology, Bhabha Atomic Research Centre, Trombay, Bombay, India, 8 December 1971.

- 152. JOSEPHSON, E. S. USA Program for radappertized food products. IAEA/FAO International Training Course on Food Irradiation Technology and Techniques, Trombay, Bombay, India, 9 December 1971.
- The objectives and present status of irradiation of meat and meat products. IAEA/FAO Study Group Meeting on Food Irradiation for the South East and East Asian Countries, Bangkok, Thailand, 13-17 December 1971.
- Food irradiation and feeding of the military.

  Nutrition Board, Imperial Iranian Armed Forces, Tehran, Iran,
  21 December 1971.
- Status of food irradiation. Institute of Standards and Industrial Research of Iran, Ministry of Economy, Karadj, Iran, 22 December 1971.
- Recent advances in radappertization of food. Soreq
  Nuclear Research Centre, Israel Atomic Energy Commission, Yavne,
  Israel, 24 December 1971.
- 157. Radiation preservation of food. Department of Food Science and Technology, University of Massachusetts, Amherst, Mass., 5 May 1972.
- 158. Why food irradiation? Rotary Club, Waltham, Mass., 24 May 1972.
- 159. KAPSALIS, J. G., R. A. SEGARS, H. MOSKOWITZ, and R. A. KLUTER.
  The textural behavior of compressed space foods upon storage.
  Institute of Food Technologists, Minneapolis, Minn., 21-24 May 1972.
- 160. KEGERREIS, J. E., J. W. GOULD, and E. M. KENYON. Microwave power absorption in a multimode cavity. Symposium on Microwave Power, International Microwave Power Institute, Ottawa, Canada, 23-26 May 1972.
- 161. \_\_\_\_\_\_, and E. M. KENYON. A technique for measurement of the dielectric properties of low and high loss materials. Symposium on Microwave Power, International Microwave Power Institute, Ottawa, Canada, 23-26 May 1972.

- 162. KENYON, E. M. Microwave energy applications to food processing.

  Chemical Engineering Colloquium, Department of Chemical Engineering, Worcester Polytechnic Institute, Worcester, Mass., 6 March 1972.
- 163. KILLORAN, J. J., and E. WIERBICKI. The flexible package for radappertized foods. Institute of Food Technologists, Minneapolis, Minn., 21-24 May 1972.
- 164. KLICKA, M. V. Combat feeding systems and current advances in food research. U.S. Army Quartermaster School, Fort Lee, 7a., 16-17 May 1972.
- 165. Food research and space foods. Peter Bent Brigham Hospital, Boston, Mass., 24 April 1972.
- Some views of the future in food preparation.

  Northeastern University, Boston, Mass., 10 May 1972.
- Space food developments and new military ration developments. C. W. Post Center, Long Island University, Greenvale, N.Y., 16 August 1971.
- Space foods. Kiwanis Club, Framingham, Mass.,

  22 July 1971; Reeds School, Woburn, Mass., 11 November 1971;
  Loker School, Wayland, Mass., 28 March 1972; Framingham Lions
  Club, Framingham, Mass., 4 April 1972; Mary Finn School, Southboro, Mass., 4 May 1972; Long Island Lutheran High School,
  Brookville, N.Y., 20 May 1972.
- Space foods and current operational rations.

  U.S. Army Reserve School, Providence, R.I., 14 March 1972;

  B'Nai B'Rith, Stoughton, Mass., 23 March 1972; South Shore

  National Science Center, Norwell, Mass., 24 March 1972; Wilmington High School, Wilmington, Mass., 14 April 1972; The American Council of Independent Laboratories, Harwichport, Mass.,

  6 May 1972; Food Service Director's Association, Brandeis University, Waltham, Mass., 11 May 1972.
- Space foods and NLABS' developments. Framingham Stars College, Framingham, Mass., 5 August 1971; The Hannah Goddard Chapter, DAR, Brookline, Mass., 15 November 1971; Leicester Lion's Club, Leicester, Mass., 22 May 1972.

- 171. KOSTICK, J. Enzymatic saccharification of cellulose. The Great Garbage Fair and Ecological Exposition, Franklin, Mass., 16 April 1972; Framingham South High School, Framirgham, Mass., 11 May 1972.
- 172. Enzymatic saccharification of cellulose and a novel proposal for cleaning up oil spills. Conservation Fair, Mansfield, Mass., 29 April 1972.
- 173. LEE. F. H. Career opportunities in food research. Framingham State College, Framingham, Mass., 4 April 1972.
- 174. LUKSICH, R. B. DOD procurement standards for beef, diced, frozen (for stewing) and beef roasts and steaks, boneless, frozen.

  Government-Industry Conference, Chicago, Ill., 16 July 1971.
- 175. MABROUK, A. F. Water-soluble flavor precursors of beef. Peptidehound nucleotides in beef muscle. American Chemical Society, Washington, D.C., 12-15 September 1971.
- 176. Flavor research at U.S. Army Natick Laboratories.

  International Flavors & Fragrances, Inc., Union Beach, N.J.,
  21 October 1971.
- 177. Meat flavor research at U.S. Army Natick Laboratories. University of Massachusetts, Amherst, Mass., 10 December 1971.
- 178. MANDELS, M. Production and applications of fungal cellulases.

  American Society for Microbiology, Philadelphia, Pa., 27 April 1972.
- 179. L. HONTZ, and D. BRANDT. Disposal of cellulosic waste materials by enzymatic hydrolysis. Army Science Conference, West Point, N.Y., 22 June 1972.
- 180. MEHRLICH, F. P. The challenge and the opportunity. R&D Associates, Inc. Fall Meeting, ".S. Army Natick Laboratories, Natick, Mass., 20 October 1971.
- Progress in food irradiation. New England Association of Food and Drug Officials, Cranston, R.I., 4 February 1972.

## Technical Papers (continued)

- 182. MEHRLICH, F. P. Novel foods out of this world. 51st New England Hospital Assembly, Prudential Center, Boston, Mass., 29 March 1972.
- 183. Food adventures around the world. Wives of CPAs of
  New England, Walpole, Mass., 19 January 1972; Members of Club 76,
  Maitre Jacques Restaurant, Boston, Mass., 31 March 1972.
- 184. MOORE, K. A. Boning and trimming procedures for the fabrication of beef roasts and steaks according to the provisions of LP/P DES 12-71. USAMVIS, Chicago, Ill., 15 July 1971; 24 February 1972.
- A new military concept in the procurement of beef roasts and formed beef steaks. North West Grocers Association, Portland, Ore., 16 April 1972.

TORNO CONTROL OF THE SECOND CONTROL OF THE S

- 186. RAHMAN, A. R. Recent advances in food research. U.S. Army Quartermaster School, Fort Lee, Va., 6-7 October 1971.
- 187. Preservation of foods by dehydration and compression.

  U.S. Army Quartermaster School, Fort Lee, Va., 16-17 May 1972.
- 188. , W. L. HENNING, S. BISHOV, and D. E. WESTCOTT.

  Increased density for military foods. Army Science Conference,
  West Point, N.Y., 20-23 June 1972.
- 189. ROWLEY, D. B., F. FEEHERRY, and W. MCCALL. Cleaning Clostridium botulinum 62A spores without activation. Interagency Botulism Research Coordinating Committee Meeting, Atlanta, Ga., 11-12 August 1971.
- Temperature constraints and sanitation to insure microbial quality of centrally prepared foods. Conference on Fort Lewis/Natick Laboratories Centralized Army Feeding System, Tacoma, Wash., 2-9 November 1971.
- 191. Potential microbiological food hazards and their control. DOD Armed Forces Product Evaluation Committee Meeting, Natick, Mass., 3-4 November 1971.

## Technical Papers (continued)

And the second of the second o

- 192. ROWLEY, D. B., B. SNYGG, F. FEEHERRY, and W. MCCALL. Amino acid initiated germination of <u>Clostridium botulinum</u> 62A spores.

  American Society for Microbiology, Philadelphia, Pa., 24-28

  April 1972.
- 193. SECRIST, J. L. Commodity requirements of new specifications for the procurements of beef roasts and steaks and of diced beef for stewing. Government-Industry Conference, Chicago, Ill., 15 July 1971.
- 194. A specification for separate line items of boneless beef steaks and roasts. U.S. Air Force Beef Workshop, Scott Air Force Base, Ill., 21 September 1971.
- 195. Production engineering of shrimp, chilled and frozen.

  Military Food Inspectors Shrimp Seminar, Mobile, Ala., 26 January
  1972.
- Recent R&D effects of beef products for the military services. Western States Meat Packers Association, Portland, Ore., 19 February 1972.
- 197. SHULTS, G. W., and E. WIERBICKI. Effect of condensed phosphates on swelling and water holding capacity of chicken meat. Institute of Food Technologists, Minneapolis, Minn., 21-24 May 1972.
- 198. SILVERMAN, G. The influence of cultural conditions on enterotoxin secretion by <u>Staphylococcus aureus</u>. Department of Microbiology, University of New Hampshire, Durham, N.H., 19 November 1971.
- Sanitary considerations in fast food service.

  Department of Nutrition and Food Science, University of Rhode Island, Kingston, R.I., 4 April 1972.
- 200. The design and monitoring of microbial constraints for a central preparation chill food system for the Army. Food Industry Conference on "Fast Foods", University of Rhode Island, Newport, R. I., 16 May 1972.

## Technical Papers (continued)

- 201. WALKER, J. E., JR., and J. G. KAPSALIS. The effect of azodicarbonamide (formamide 1,1'azobis) on myofibrillar proteins. American Chemical Society, Buffalo, N.Y., 11-13 October 1971.
- 202. WIERBICKI, E., G. G. GIDDINGS, and F. HEILIGMAN. Development of radappertized pork sausage. Institute of Food Technologists, Minneapolis, Minn., 21-24 May 1972.

#### Patents

- 203. HEILIGMAN, F. Method for packaging flexible packages in cylindrical containers. U.S. Patent No. 3,645,759, 29 February 1972.
- 204. KAPLOW, M. (General Foods). Microbial stabilization process for produce and product. U.S. Patent No. 3,595,681, 27 July 1971.
- 205. MABROUK, A. F., and J. K. JARBOE. Method of extracting and concentrating flavor precursors of meats. U.S. Patent No. 3,634,097, 11 January 1972.
- 206. SHULTS, G. W. Process for preparing sterilized comminuted beef products. U.S. Patent No. 3,592,658, 13 July 1971.
- 207. \_\_\_\_\_, and E. WIERBICKI. Process for stabilizing structure of ground meat. U.S. Patent No. 3,647,500, 10 February 1972.

#### Book Chapters

- 208. JOSEPHSON, E. S. Radiation sterilization of food in the USA.

  <u>In Proceedings of the 8th Conference on Radioisotopes</u>, 13-16

  November 1967, Tokyo, Japan. Japan Atomic Industrial Forum,
  Inc., 1972, pp. 755-767.
- 209. REESE, E. T., and M. MANDELS Enzymatic degradation of cellulose and its derivatives. <u>In High Polymers</u>, vol. 5, part 5, Cellulose and Cellulose Derivatives. N. Bikales and L. Segal (eds.). Wiley-Interscience, New York, N.Y., 1971, pp. 1079-1094.

# FOOD LABORATORY

# Other Publications

210. WIERBICKI, E. ABMPS Report No. 16 for Committee on Radiation Preservation of Food, Appendices F-G. National Academy of Science-National Research Council, Contract No. DAAG-17-C-0090, 23-29 January 1972.

## Technical Reports

- 211. ADAMS, E. Q. Evaluation of rack-type convection oven and proof box. 72-8-GP, August 1971 (AD 732 430).
- 212. BYRNE, R. J., R. S. SMITH, R. L. BUSTEAD, and J. K. PRIFTI. A cost analysis of modern high production food service systems for military garrison applications. 72-67-OR&SA, May 1972.
- 213. COX, F. A., J. P. ORR, R. G. SHEVLIN, A. L. PAYNTER, and E. MAGDICH. Explosive forming of M-1 helmets. Ryan Aeronautical Company, Contract DA-19-129-QM-1540. 72-34-GP, July 1961 (AD 735 706).
- 214. DUXBURY, D. D., P. F. SAMS, W. F. HOWELER, J. H. GEE, and W. N. MILLER. Reliability of flexible packaging for thermoprocessed foods under production conditions. Phase I: Feasibility. Swift & Co., Contract DAAG-17-69-C-0160. 72-77-GP, July 1970.
- 215. EFFENBERGER. L. J. Forming and shaping of titanium alloy. E. F. Industries, Inc., Contract DAAG-17-70-C-0099. 72-57-GP, September 1971 (AD 745 113).
- 216. HAPGOOD, W. Lightweight, compact space heating/water heating system. Raytheon Company, Microwave and Power Tube Division, Contract DAAG-17-71-C-0118. 72-58-GP, January 1972 (AD 741 867).
- 217. HARRIS, J. M., J. S. GLASGOW, and A. RUDNICK. Development of a new acceptance criterion for M-1 helmets. Phase II: Preliminary design of a thickness inspection system. Battelle Memorial Institute, Contract DAAG-17-68-C-0138. 72-60-GP, October 1969.
- 218. KAREL, M., and G. N. WOGAN. Migration of substances from flexible containers for heat-processed foods. Massachusetts Institute of Technology, Contract DA-19-129-QM-2080 (O1 6149). 72-66-GP, June 1969 (AD 742 848).
- 219. MIRABELLA, A. C. M-1 helmet suspension system. Welson & Co., Inc., Contract DAAG-17-70-C-0025. 72-22-GP, January 1971 (AD 738 166).
- 220. Reference Manual on Shelters. Shelters Branch, Shelters & Organizational Equipment Division, General Equipment & Packaging Laboratory, January 1972.\*

## Technical Reports (continued)

- 221. RUDNJCK, A., G. H. BEATTY, and R. E. MARINGER. Development of a new acceptance criterion for M-1 helmets. Phase I: Analyses of data and development of inspection plan. Battelle Memorial Institute, Contract DAAG-17-68-C-0138. 72-20-GP, November 1971 (AD 734 339).
- 222. SMITH, R. S., R. L. BUSTEAD, J. K. PRIFTI, and C. CHANG. An evaluation of selected advanced high production feeding systems. 72-47-OR&SA, February 1972 (AD 739 502).
- 223.

  J. K. PRIFTI, and J. WOLFSON. A system evaluation of army garrison feeding at Fort Lewis, Washington. 72-37-OR&SA, January 1972 (AD 738 148).

### Journal Articles

224. DECAREAU, R. V. Editorial. Microwave Energy Appl. Newsl., 4(3):2 (1971).

Same of the second of the seco

- 225. Editorial. Microwave Energy Appl. Newsl., 4(4):2, 13
- 226. Editorial. Microwave Energy Appl. Newsl., 4(6):2
- 227. \_\_\_\_\_ Editorial. Microwave Energy Appl. Newsl., 5(1):2, 16
- 228. \_\_\_\_\_ Editorial. Microwave Energy Appl. Newsl., 5(2):2 (1972).
- 229. Editorial. Microwave Energy Appl. Newsl., 5(3):2 (1972).
- 230. The time is ripe. (Editorial.) Microwave Energy Appl Newsl., 4(5):2, 15 (1971).
- 231. Equipment for heating pre-cooked frozen foods for food service. Microwave Energy Appl. Newsl., 4(6):9-12 (1971).
- 232. The year in review. Microweve Energy Appl. News1., 5(1):2, 16 (1972).

## Journal Articles (continued)

- 233. DECAREAU, R. V. Tips for microwave oven users. Microwave Energy Appl. Newsl., 4(5):12-14 (1971).
- 234. GARG, D. P., and J. S. BOZIUK, III. Parameter estimation of non-linear dynamical systems. Int. J. Contr., 15(6):1121-1127 (1972).
- 235. HU, K. H., and J. B. BREYER. Pinhole resistance of flexibles. Part I. Mod. Packag., 44(12):46-48 (1971).
- 236. , and J. B. BREYER. Pinhole resistance of flexibles.

  Part II. Mod. Packag., 45(1):47-49 (1972).
- 237. ORDWAY, G. B., and G. L. SCHULZ. Inspects package seals. Food Eng., 44(2):64-65 (1972).
- 238. SKELTON, J. The biaxial stress strain behavior of fabrics for airsupported tents. J. Mater., 6(3):656-682 (1971).
- ance of textile materials. Part XIX. The shear behavior of fabrics under biaxial loads. Text. Res. J., 41(11):871-880 (1971).

## Technical Papers

- 240. DECAREAU, R. V. Equipment for heating pre-cooked frozen foods for food service. Future for Frozen Foods Conference, Iowa State University, Ames, Iowa, 3 November 1971.
- 241. HU, K. H. Time-temperature indicating systems capable of showing written messages indicating the status of a product shelf life.

  American Ordnance Association, Memphis, Tenn., 25 April 1972.
- 242. KILLORAN, J. J. Effects of radiation on polymer materials.
  Worcester Polytechnic Institute Weekly Chemistry Seminar, Worcester,
  Mass., 10 January 1972.
- 243. Spinoff of food research relative to the general public. Women's Club of Notre Dame, Worcester, Mass., 20 April 1972.

## Technical Papers (continued)

- 244. KILLORAN, J. J., and E. WIERBICKI. The flexible package for radappertized foods. Institute of Food Technologists 32nd Annual Meeting, Minneapolis, Minn., 21 May 1972.
- 245. LAMPI, R. A. Packaging developments. Naval Reserve Meeting, Natick, Mass., 27 September 1971.
- 246.

  , N. ROBERTS, and F. COSTANZA. Automatic infrared radiometric scanning to detect flexible package seal defects. Spring Conference of American Society for Nondestructive Testing, Los Angeles, Calif., 13 March 1972.
- 247. NEBESKY, E. A. New advances in packaging research. General Foods Corp. Packaging Seminar, Tarrytown, N. Y., 18 November 1971.
- 248. RUBINATE, F. J. The R&D in packaging. Training Class, Aberdeen Proving Ground, Aberdeen, Md., September 1971.
- 249. TROISI, F. L. Changes to Federal Specifications PPP-B-636 and PPP-B-601. Packaging & Containerization Class, Joint Military Packaging Training Center, Aberdeen Proving Ground, Aberdeen, Md., December 1971.
- 250. WISE, R., R. V. DECAREAU, and J. NYSTROM. Mathematical and experimental analysis of microwave meat cooking. Institute of Food Technologists 32nd Annual Meeting, Minneapolis, Minn., 23 May 1972.

#### Patents

251. SCHULZ, G. L., and R. T. MANSUR, Heat Sealer. U.S. Patent No. 3,673,041, 27 June 1972.

## Technical Reports

- 252. BENSEL, C. K., R. F. Q. JOHNSON, and T. L. NICHOLS. A human factors evaluation of cold weather face masks. 72-73-PR, April 1972.
- 253. BRANCH, L. G., and H. L. MEISELMAN. Consumer reaction to the Fort Lewis CAFe system. 72-64-PR, May 1972.
- 254. GREENBERGER, M., and A. M. KAPLAN. Rot- and weather resistance of πethylolmelamine-treated cotton fabrics. 72-25-PR, December 1971 (AD 739 493).
- 255. KAPLAN, A. M., and Members of Applied Microbiology Group, PRL.
  Proceedings of the Twentieth Conference on Prevention of Microbiological Deterioration of Military Materiel, U.S. Army Natick Laboratories. 72-78-PR, June 1972.
- 253. KIESS, H. O., J. B. SWANSON, and R. F. Q. JOHNSON. Fort Lewis dining facilities consumer survey. 72-44-PR, January 1972 (AD 741 789).
- 257. MEISELMAN, H. L., W. VAN HORNE, B. HASENZAHL, and T. WEHRLY. The 1971 Fort Lewis food preference survey. 72-43-PR, January 1972 (AD 741 370).
- 258. MCSKOWITZ, H. R., T. L. NICHOLS, H. L. MEISELMAN, and J. SIDEL. Food preferences of military men, 1967 72-70-PR, May 1972.

## Journal Articles

Salahan Salaha

これのないという はいない はいない ないない ないしゅうしゅう かんしゅう かんしょう かんかん はないない はんない ないない かんしゅう しゅうしゅう しゅうしゅう しゅうしゅう

- 259. BAILE, C. A., S. M. BEAN, C. W. SIMPSON, and H. .. JACOBS. Feeding effects of hypothalamic injections of prostagle dins. Abstract #85. Proc. 25th Intern. Cong. of Physiol. Sci., 9:33 (1971).
- 260. BAZINET, M. L., W. G. YEOMANS, and C. MERRITT, JR. Mass spectra of organometallic acetylenes of Group IV and V elements. Proc. 19th Ann. Conf. on Mass Spect. and Allied Topics, pp. 165-168 (1971).
- 261. BLUHM, A. L., and J. WEINSTEIN. Alpha-phenylnitroxide radicals from alpha-phenylnitrones. J. Org. Chem. 37(11):1748-1753 (1972).

- 262. BUSHWELLER, C. H., G. E. YESOWITCH, and F. H. BISSETT. The A value of the deuteroamino group determined by the nuclear magnetic resonance peak area method at -93°. J. Org. Chem. 37(9):1449-1450 (1972).
- 263. CHALK, R. C., D. H. BALL, and L. LONG, JR. Conditions for meighbouring group participation in displacement reactions of 5-0-sulfonyl-D-glucofurancse derivatives. Carbohyd. Res. 20(1):151-164 (1971).
- 264. PASTOLI, F. R. Fluorescence of the soluble 'sweet-sensitive' protein complexes with sugars. Experientia 28(4):387-389 (1972).
- 265. DATEO, G. P., JR., and L. LONG, JR. Gymnema acid, the anti-saccharine principle of Gymnema sylvestre leaves: studies on the isolation and heterogeneity of gymnemic acid A<sub>1</sub>. AGFD abstract #2.

  161st Natl. Meet., Amer. Chem. Soc., Los Angeles, Calif., (1971).
- 266. DAVIES, J. M., and W. ZAGIEBOYLO. Electron irradiation of dilute aqueous solutions of polymers over a range of temperatures. Int. J. Appl. Radiat. Isotop., 22(9):521-528 (1971).
- 267. FAITH, W. T., C. NEUBECK, and E. T. REESE. Production and application of enzymes. Advan. Brochem. Eng., 1:78-111 (1971).
- 268. FAULL, J. R., H. L. MEISELMAN, and B. P. HALPERN. Tastelessness: a poorly defined concept The example of quinine ethylcarbonate. Psych. Record, 21:219-228 (1971).
- 269. FOX, M. F., and E. HAYON. New CTTS absorption bands of iodide in the far ultraviolet region. Chem. Phys. Letters, 14:442 (1972).
- 270. GURNEY, A. B., and L. M. ROTH. A generic review of the cockroaches of the subfamily Panchlorinae (Dictyoptera, Blattaria, Blaberidae). Ann. Ent. Soc. Amer., 65(3):521-532 (1972).
- 271. HALFORD, M. H., D. H. BALL, and L. LONG, JR. The influence of reaction conditions and stereochemistry on some thioacetate displacements with carbohydrate sulfonates. J. Org. Chem., 36(24): 3714-3719 (1971).
- 272. HAMPTON, M. L., N. G. MCCORMICK, N. C. BEHFOROUZ, and E. FREESE.

  Regulation of two aspartokinases in <u>Bacillus subtilis</u>.

  J. Bact., 108(3):1129-1134 (1971).

## Journal Articles (continued)

Land Control of the C

- 273. HAYASHI, N., E. HAYON, T. IBATA, A. MATSUMOTO, and N. N. LICHTIN.
  Pulse radiolysis of liquid amides. J. Phys. Chem., 75(15):22672272 (1971).
- 274. HAYON, E., A. TREININ, and J. WILF. Electronic spectra, photo-chemistry and autoxidation mechanism of the sulfite-bisulfite-pyrosulfite systems. The SO<sub>2</sub>, SO<sub>3</sub>, SO<sub>4</sub>, and SO<sub>5</sub> radicals.

  J. Amer. Chem. Soc., 94(1):47-57 (1972).
- 275. , and M. SIMIC. Free radical intermediates produced in the pulse radiolysis of simple peptides in aqueous solution. Intra-Sci. Chem. Rep., 5(4):357-369 (1971).
- 276.

  , and M. SIMIC. Intermediates produced from the oneelectron oxidation of hydrazine. Evidence for the formation and
  decay of tetrazane and triazene. J. Amer. Chem. Soc., 94(1):4247 (1972).
- 277. \_\_\_\_\_, and M. SIMIC. Pusle radiolysis study of cyclic peptides in aqueous solution. Absorption spectrum of the peptide radical-NHCHCO. J. Amer. Chem. Soc., 93:6781-6786 (1971).
- 278. , and M. SIMIC. Radiation sensitization reactions of N-ethylmaleimide with model compounds. Radiat. Res., 50(3):464-478 (1972).
- 77. IBATA, N. N. LICHTIN, and M. SIMIC. Sites of attack of the hydroxyl radical on amides in aqueous solution.

  II. The effects of branching alpha to carbonyl and to nitrogen.

  J. Amer. Chem. Soc., 93(21):5388-5394 (1971).
- 280. HEINMETS, F. Computer simulation and analysis of a model system for tryptophan metabolism in pineal gland. Physiol. Chem. Phys., 3:247-292 (1971).
- 281. Computer simulation and analysis of tryptophan metabolism via kynurenine pathway in liver. Comput. Bio. Med., 1:323-336 (1971).
- 282. An essential approach to solve complex biological and environmental problems. Proc. 1971 Army Numer. Anal. Conf. ARO-D Report 71-4, pp. 21-39 (1971).

- 283. HOFFMAN, M. Z., and M. SINIC. Ligand-to-metal intramolecular electron transfer in the reduction of p-nitrobenzoatopentaamminecobalt (III) ion. J. Amer. Chem. Soc., 94:1757-1759 (1972).
- 284. JACOBS, H. L. Ambient temperature, insulin and available food choice as determinants of appetite. J. de Phys., 63(3):291-292 (1971).
- 285. JOHNSON, R. F. Q. Hypothesis generation without verification. A review of J. R. Hilgard, Personality and hypnosis: A study of imaginative involvement. Contemp. Psych., 16:604-605 (1971).
- 286. KRONMAN, M. J., and L. G. HOLMES. The fluorescence of native, denatured and reduced-denatured proteins. Photochem. and Photobiol., 14(2):113-134 (1971).
- 287. LEVINSON, H. S., and M. T. HYATT. Distribution and correlation of events during thermal inactivation of <u>Bacillus megaterium</u> spores.

  J. Bacteriol., 108(1):111-121 (1971).
- 288. LOCKHART, J. M., and H. O. KIESS. Auxiliary heating of the hands during cold exposure and manual performance. Human Factors, 13(5):457-465 (1971).
- 289. MEISELMAN, H. L. Modern military man's food preference. Activities Report 24(1):10-59 (1972).
- 290. MERRITT, C., JR., C. DIPIETRO, and M. L. BAZINFT. A combined gas chromatographic-vapor phase pyrolysis-mass spectrometric analysis system. Proc. 19th Ann. Conf. on Mass Spect. and Allied Topics, pp. 224-226 (1971).
- 291. \_\_\_\_\_\_, and C. DIPIETRO. Qualitative analysis of gas chromatographic eluates by means of vapor phase pyrolysis. I. Small molecule pyrograms. Anal. Chem., 44(1):57-59 (1972).
- 292. \_\_\_\_\_, and D. H. ROBERTSON. Qualitative analysis of gas chromatographic eluates by means of vapor phase pyrolysis.

  II. Classification by set theory. Anal. Chem., 44(1):60-63 (1972).

- 293. MOSKOWITZ, H. R. Perceptual changes in taste mixtures. Perc. Psych., 11(4):257-262 (1972).
- of texture. J. Texture Stud., 11:118-128 (1971).
- Scales of subjective viscosity and fluidity of gum solutions. J. Texture Stud., 3:89-100 (1972).
- Subjective ideals and sensory optimization in evaluating perceptual dimensions on food. J. Appl. Psych., 56(1): 60-66 (1972).
- The sweetness and pleasantness of sugars. Amer. J. Psych., 84(3):387-405 (1971).
- 298. NAKASHIMA, M., J. A. SOUSA, and R. C. CLAPP. Spectroscopic species of 4-methylumbelliferone in water and in ethanol. Nature Phys. Sci., 235(53):16-18 (1972).
- 299. NETA, P., M. Z. HOFFMAN, and M. SIMIC. Electron spin resonance and pulse radiclysis studies of the reactions of OH and O- radicals with some organic compounds. J. Phys. Chem., 76(6):847-853 (1972).
- 300. REESE, E. T., Γ. W. PARRISH, and M. ETTLINGER. Nojîrimycin and D-glucono-1,5-lactone as inhibitors of carbohydrates. Carbohyd. Res., 18:381-388 (1971).
- 301. ROBBINS, F. M., and L. G. HOLMES. Binding of N-methyl nicetinamide chloride by alpha-lactalbumin. J. Biol. Chem., 247:3062-3065 (1972).
- 302. ROBERTSON, D. H., and R. I. REED. Further aspects of the naive analysis of structure. Proc. 19th Ann. Conf. on Mass Spect. and Allied Topics, pp. 68-69 (1971).

- 303. ROTH, L. M. The male genitalia of Blattaria. V. Epilampra spp. (Blaberidae: Epilamprinae). Psyche, 77(4):436-486 (1970).
- The male genitalia of Blattaria. VI. Blaberidae:

  Oxyhaloinae. Psyche, 78(1-2):84-106 (1971).
- The male genitalia of Blattaria. VII. <u>Galiblatta</u>,

  <u>Dryadoblatta</u>, <u>Poroblatta</u>, <u>Colapteroblatta</u>, <u>Litopeltis</u>, and

  <u>Cariacasia</u>. (Blaberidae: Epilamprinae). Psyche, 78(3):180-192

  (1971).
- The male genitalia of Blattaria. VIII. <u>Panchlora</u>,

  <u>Anchoblatta</u>, <u>Biollega</u>, <u>Pelloblatta</u>, <u>Achroblatta</u>. (Blaberidae: Panchlorinae). Psyche, 78(4):296-305 (1972).
- 307.

  , and K. PRINCIS. <u>Pseudocalolampra</u> a new genus of cockroach from Africa. Proc. Ent. Soc. of Wash., 73(3):329-336 (1971).
- SASSAMAN, W. A., and C. MERRITT, JR. Determination of water from ultramicro solid samples. Microchem. J., 16(2):188-193 (1971).
- 309. SHARMA, K. N., S. DUA-SHARMA, V. GOPAL, and H. L. JACOBS. Mechanism of action of gastric mechanoreceptors; effect of topical application of certain ions and drugs. Abstract #1517. Proc. 25th Intern. Cong. of Physiol. Sci., 9:510 (1971).
- 310. SIMIC, M., and M. Z. HOFFMAN. Acid-base properties of the radical produced in the pulse radiolysis of aqueous solutions of benzoic acid. J. Phys. Chem., 76(10):1398-1404 (1972).
- 311.

  , and E. HAYON. Intermediates produced from the oneelectron oxidation and reduction of hydroxylamines. Acid-base
  properties of the amino, hydroxyamino, and methoxyamino radicals.

  J. Amer. Chem. Soc., 93(23):5982-5986 (1971).
- 312. , P. NETA, and E. HAYON. Pulse radiolytic investigation of aliphatic amines in aqueous solution. J. Radiat. Phys. Chem., 3:309-320 (1971).
- 313. \_\_\_\_\_\_, and E. HAYON. Radical reactions of N-ethyl maleimide in radiation sensitization. Int. J. Radiat. Biol. 20(6):589-592 (1971).

## Journal Articles (continued)

- 314. SIMIC, M., and E. HAYON. Reductive deamination of oligopeptides by solvated electrons in aqueous solution. Radiat. Res., 48(2): 244-255 (1971).
- 315. SIMMONS, E. G. Review of "Dematiaceous Hyphomycetes" by M. B. Ellis. Mycologia, 63:380-386 (1971).
- 316. SOUSA, J. A., and J. F. ROACH. A new tuning method for dye lasers. Rev. Sci. Instrum., 42(11):1736-1737 (1971).

## Technical Papers

- 317. ANGELINI, P., M. L. BAZINET, and C. MERRITT, JR. Low dose radiation processing of fresh poultry. 31st Annual Meeting, Institute of Food Technologists, New York, N.Y., 25 May 1971.
- 318. BAILE, C. A., S. M. BEAN, C. W. SIMPSON, and H. L. JACOBS. Feeding effects of hypothalamic injections of prostaglandins. Fourth International Conference on the Regulation of Food and Water Intake, Cambridge, England, August 1971; 25th International Congress of Physiological Sciences, Munich, Germany, July 1971.
- 319. BAILEY, L. H. Kinetics of algae growth under varying phosphorous concentrations. Pioneering Research Laboratory, U.S. Army Natick, Mass., 28 April 1972.
- 320. BALL, D. H. What does a chemist do in a government laboratory? "Operation Interface". University of New Hampshire, Durham, N.H., 16 November 1971.
- 321. BENSEL, C. K., J. M. LOCKHART, and T. L. NICHOLS. An overview of the Human Factors Psychology Program at the USANLABS. Human Engineering Laboratory, Aberdeen Proving Ground, Md., 28-29 March 1972.
- 322. BLUHM, A. L., and J. WEINSTEIN. Electron spin resonance studies of nitroxides from alpha-phenylnitrones. Chief Investigators Conference and Review of Military Theme Photochemistry and Chemiluminescence, U.S. Army Natick Laboratories, Natick, Mass. 27 October 1971.

## Technical Papers (continued)

- 323. BLUHM, A. L. Electron spin resonance studies of nitroxide radicals. Pioneering Research Laboratory, U.S. Army Natick Laboratories, Natick, Mass., 24 March 1972.
- 324. CHALK, R. C. Conditions for neighboring group participation in displacement reactions of 5-0-sulfonyl-D-glucofuranose derivatives. 162nd National Meeting, American Chemical Society, Washington, D.C., 16 September 1971.
- 325. FEITELSON, J., and E. HAYON. Electron transfer mechanism of the excited state of tyrosine. Sixth International Photochemistry Conference, Bordeaux, France, September 1971.
- 326. GANCHROW, D. Correlation on neurophysiology and behavior in taste. U.S. Army Research Institute of Environmental Medicine, Natick, Mass., July 1971.
- 327. GINGRICH, J. B. Survival, histology and enzyme activity of 2-spotted spider mites exposed to cold temperatures (15° to -196°C). Pioneering Research Laboratory, U.S. Army Natick Laboratories, Natick, Mass., 29 October 1971.

ZI.

The common properties of the contraction of th

- 328. HANSCOM, D. R. Intra-molecular energy transfer between non-conjugated chromophores. Pioneering Research Laboratory, U.S. Army Natick Laboratories, Natick, Mass., 10 March 1972.
- 329. HEINMETS, F. Computer simulation and analysis of the mechanism of enzyme induction. University of Pennsylvania, Philadelphia, Pa., 3 March 1972.
- 330. HIRSCH, E. S. Ecological derivation of feeding patterns and motivation in the guinea pig. Pioneering Research Laboratory, U.S. Army Natick Laboratories, Natick, Mass., 18 February 1972.
- 331. HOFFMAN, M. Z., and E. HAYON. Interaction of electrons and hydrogen atoms with the disulfide linkage. International Conference on Pulse Radiolysis, Pinawa, Canada, October 1971.
- 332. HOGE, H. J., and M. N. PILSWORTH. The freeze-drying of beef; theory and experiment. Pioneering Research Laboratory, U.S. Army Natick Laboratories, Natick, Mass., 12 May 1972.

# Technical Papers (continued)

- 333. JACOBS, H. L. E. von Sydow on interdisciplinary approaches to flavor. Interaction of the chemical senses with internal regulatory mechanisms. Surmer Flavor Series, U.S. Army Natick Laboratories, Natick, Mass., July 1971.
- Taste-oriented research related to food acceptance.

  Nestle Research Laboratory, Vevey, Switzerland, 25 October 1971;
  Food Research Institute, Norwich, England, 26 October 1971;
  Bush, Boake, Allen, Ltd., London, England, 29 October 1971;
  Department of Food Science, University of Reading, Reading,
  England, 2 November 1971; National Institute for Research in
  Dairying (NIRD), Reading, England, 3 November 1971; Department
  of Psychology, University of Utrecht, Utrecht, Holland, 8 November 1971.
- John Adkins Nutrition Laboratory, University of London, Queen Elizabeth College, London, England, 28 October 1971; Department of Biochemistry and Physics, University of Reading, Reading, England, 2 November 1971; Department of Psychology, University of Utrecht, Utrecht, Holland, 8 November 1971.
- 336. Effect of nutritional state on oral-gastric sensory systems. French Society of Alimentary Behavior, University of Strasbourg School of Medicine, Strasbourg, France, 6 November 1971.
- 337. JOHNSON, R. F. Q. Prospects for the further development of a behavioral cognitive theory of hypnotism. Annual Meeting, Society for Clinical and Experimental Hypnosis, Chicago, Ill., 8-10 October 1971.
- 338. KAPLAN, A. M., M. MANDELS, and M. GREENBERGER. Mode of action of resins in preventing microbial degradation of cellulosic textiles. 2nd International Biodeterioration Symposium, Lunteren, Holland, 17 September 1971.
- Current developments in disinfection. Part of a course "Current Problems in Environmental Engineering and Sanitation" given by the Sanitary Engineering Section, U.S. Army Medical Service Corps at U.S. Environmental Health Agency, Edgewood Arsenal, Md., 18 April 1972.

# Technical Papers (continued)

- 340. LEVINSON, H. S. Cryptobiosis: Dormancy and its alterations.

  Discussion and summation. 5th International Spore Conference,
  Fontana, Wisc., 9 October 1971.
- Loss of dipicolinic acid (DPA) and germinability during heat inactivation of Bacillus megaterium spores. Northeast Branch, American Society for Microbiology, Emmanuel College, Boston, Mass., 19 January 1972.
- 342. LOVELETTE, C. A. Insect chemosterilants. Pioneering Research Laboratory, U.S. Army Natick Laboratories, Natick, Mass., 7 April 1972.
- 343. MANDELS, G. Endogenous respiration, dormancy, and germination.
  1st International Mycological Congress, Devon, England, 9 September 1971.
- 344. MCCORMICK, N. G., and H. S. LEVINSON. Germination properties and proteins of spores of <u>B. megaterium</u> QM B1551 mutants. 5th International Spore Conference, Fontana, Wisc., 10 October 1971.
- 345.

  , and H. S. LEVINSON. Germination properties of spores
  of Facillus megaterium mutants. Northeast Branch, American
  Society for Microbiology, Emmanuel College, Boston, Mass., 19 January
  1972.
- 346. MEISELMAN, H. L. Adaption of the chemical senses. Summer Flavor Series, U.S. Army Natick Laboratories, Natick, Mass., 22 July 1971.
- 347. Current research in sensory evaluation. Cornell University, Department of Food Science, Ithaca, N.Y., 27 August 1971.
- 348. Use of natural plants to study taste. Cornell University, Section on Neurobiology and Behavior, Ithaca, N.Y., 27 August 1971.
- 349. Modern military man's food preferences. R&D Associates for Military Food and Packaging Systems, Inc., U.S. Army Natick Laboratories, Natick, Mass., 17 October 1971.

# Technical Papers (continued)

- 350. MERRITT, C., JR., and P. ANGELINI. cormation of flavor compounds from proteins and amino acids. 162nd National Meeting, American Chemical Society, Washington, D.C., 13 September 1971.
- 351.

  , J. B. HOLZ, M. L. BAZINET, and W. SASSAMAN. Design and performance of a high resolution mass spectrum photoplate reader, coupled to an online-digital computer, 10th National Meeting, Society for Applied Spectroscopy, St. Louis, Mo., 18 October 1971.
- 352.

  , and C. DIPIETRO. Qualitative analysis of gas chromatographic eluates by vapor phase pyrolysis. I. Small molecule pyrograms. 7th International Symposium on Advances in Chromatography, Las Vegas, Nev., 3 December 1971.
- 353. \_\_\_\_\_\_, and D. H. ROBERTSON. Qualitative analysis of gas chromatographic eluates by vapor phase pyrolysis. II. Classification by set theory. 7th International Symposium on Advances in Chromatography, Las Vegas, Nev., 3 December 1971.
- Applications of GC/MS to studies in food chemistry.

  Northern Utilization R&D Division, U.S. Department of Agriculture,
  Peoria, Ill., 13 January 1972.

and the control of th

- 355. Consideration of parameters for coupling gas chromatographs and mass spectrometers. Northern Utilization R&D Division, U.S. Department of Agriculture, Peoria, Ill., 13 January 1972.
- Qualitative and quantitative analysis of complex mixtures by combined GC/MS. Northern Utilization R&D Division, U.S. Department of Agriculture, Peoria, III., 14 January 1972.
- 357. Characterization of volatile food flavor constituents by gas chromatography and mass spectrometry. Institute of Food Technologists, Intermountain Section, Burley, Ida., 1 March 1972.
- 358. Studies of thermolytic dissociation processes by means of combined pyrolysis/gas chromatography/mass spectrometry. Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Cleveland, O., 7 March 1972.

# Technical Papers (continued)

- 359. MERRITT, C., JR., and D. H. ROBERTSON. Diagnostic functions in construction of a mass spectral data file. 20th Annual Conference on Mass Spectrometry and Allied Topics, Dallas, Tex., 9 June 1972.
- 360. AITTAL, L. P., J. P. MITTAL, and E. HAYON. Photo-induced decarboxylation reactions of carboxylic acids. American Chemical Society, Boston, Mass., April 1972.
- 361. MOSKOWITZ, H. R. Sensory functions for magnitude. Summer Flavor Series, U.S. Army Natick Laboratories, Natick, Mass., 8 July 1971.

المساحد بالمامية الماميدي والمديالية ميالية كالمسامة الميلية المتدائدة ماميد والميارية المتدائدة المتدائدة

- 362. Sensory evaluation of foods. Framingham State College, Framingham, Mass., 30 July 1971.
- 363. Sensory interactions the effect of viscosity upon taste. Summer Flavor Series, U.S. Army Natick Laboratories, Natick, Mass., 5 August 1971.
- Ner methods in the sensory evaluation of foods and flavors. University of Massachusetts, Amherst, Mass., 15 October 1971.
- 365. Scaling of magnitude in the chemical senses.

  Clark University, Department of Psychology, Worcester, Mass.,
  17 October 1971.
- New methods and applications of psychophysical scaling.

  Department of Consumer Sciences, University of California, Davis,
  Calif., 2 November 1971.
- Taste-texture interactions: a study in psychophysical measurement of sensations. University of California, Davis, Calif., 3 November 1971.
- Sensory evaluation methodological and substantive studies. U.S.D.A. Western Regional Laboratory, Albany, Calif., 5 November 1971.
- Sensory evaluation. Food Laboratory, U.S. Army Natick Laboratories, Natick, Mass., 12 November 1971.

# Technical Papers (continued)

- 370. MOSKOWITZ, H. R. Sensory evaluation of viscosity taste intensity and their interaction. Pioneering Research Laboratory, U.S. Army Natick Laboratories, Natick, Mass., 19 November 1971.
- 371. Physical texture of food and its effect upon taste.

  Tufts University, Department of Psychology, Medford, Mass.,
  6 December 1971.
- 372. NELSON, D. A. Photochemistry of benzoyl pyridines. Department of Chemistry, Tufts University, Medford, Mass., February 1971.
- 373. NICHOLS, T. L. The vertex potential in sensory hearing loss.
  Annual Meeting, Acoustical Society of America, Denver, Colo.,
  19 October 1971.
- 374. Computer analysis of electro-encephalograms in normal and hearing-impaired subjects. Pioneering Research Laboratory, U.S. Army Natick Laboratories, Natick, Mass., 17 March 1972.
- 375. RAISBECK, B. Organ culture techniques and their application to problems in insect physiology. Picneering Research Laboratory, U.S. Army Natick Laboratories, Natick, Mass., 5 November 1971.
- 376.

  Breakdown of cockroach sex attractant in vitro.

  Pioneering Research Laboratory, U.S. Army Natick Laboratories,
  Natick, Mass., 19 May May 1972; Tufts University, Biology Seminar,
  Medford, Mass., 21 June 1972.
- 377. RAO, P. S., and E. HAYON. Acid-base properties of peptide radicals. American Chemical Society, Boston, Mass., April 1972.
- 378. REESE, E. T., A. MAGUIRE, and F. W. PARRISH. Production of betaxylosidases by fungi. American Institute of Biological Sciences, Edmonton, Canada, 24 June 1971.
- Enzyme production from insoluble substrates. Enzyme Engineering Conference, Henniker, N.H., 9 August 1971.
- Department, Virginia Polytechnic Institute, Blacksburg, Va.,
  3 March 1971.

# Technical Papers (continued)

- 381. REESE, E. T., A. MAGUIRE, and F. W. PARRISH. Alpha 1,3 glucanase of fungi and their relationship to mycodextranase. 3rd International Fermentation Symposium, Kyoto, Japan, March 1972.
- 382. ROBBINS, F. M. Purification and characterization of cathepsins. Food Laboratory, U.S. Army Natick Laboratories, Natick, Mass., 13 January 1972.
- 383. ROBERTSON, D. H., J. CAVAGNARO, and J. B. HOLZ. Characteristic peak coding for low resolution mass spectra. 20th Annual Conference on Mass Spectrometry and Allied Topics, Dallas, Tex., 9 June 1972.
- 384. ROTH, L. M. A comparative study of aggregation behavior of Blattaria. Annual Meeting, Entomological Society of America, Los Angeles, Calif., 1 December 1971.
- 385. Cockroach behavior and pheromones. Zoecon Corporation, Palo Alto, Calif., 23 May 1972.
- Reproductive behavior in cockroaches. Chico State College, Chico, Calif., 25 May 1972.

The definition of the definition of the finite desired the first the definition of the first the first the first of the fi

- 387. SILVERMAN, S. J., H. S. LEVINSON, C. LAMANNA, and F. ROBBINS. Frustrations in attempt to produce antibody against dipicolinic acid. 5th International Spore Conference, Fontana, Wisc., 9 October 1971.
- 388. SOUSA, J. A. Laser spectroscopy. Briefing to Assistant Secretary of the Army (R&D), Washington, D.C., 9 March 1971.
- 389. Informational review/briefing. RDT&E Pollution

  Abatement Capability and Needs, Army Materiel Command, Washington,
  D.C., 29 June 1971.
- 390. Spectroscopic studies of laser-induced photochemical processes. Chief Investigators Conference and Review of the Military Theme Photochemistry and Chemiluminescence, U.S. Army Natick Laboratories, Natick, Mass., 28 October 1971.
- 391. , and M. NAKASHIMA. Photochemistry of dye lasers as applied to military camouflage systems. Army Research Office, Durham, N.C., 14 December 1971.

# Technical Papers (continued)

- 392. SOUSA, J. A. Military applications of the organic dye laser. Chief Investigators Conference and Review of the Military Theme Laser, U.S. Army Electronics Command, Fort Monmouth, N.J., 16-17 May 1972.
- 393. \_\_\_\_\_\_, and J. F. ROACH. Spectroscopic studies of luminscence emitted by dyes irradiated by laser light. Army Science Conference, West Point, N.Y., 20-23 June 1972.
- 394. SPANO, L. A., & A. CHALK, and J. T. WALSH. Abatement of nitrobodies in aqueous effluents from TNT production and finishing plants. 1st International Meeting on Pollution: Engineering and Scientific Solutions, Tel Aviv, Israel, 11 June 1972.
- 395. TREININ, A. Photochemistry of CTTS ions in solution. Boston University, Chemistry Department, Boston, Mass., October 1971.

# Other Publications

- 396. BARTOSHUK, L. M. The chemical senses. I. Taste. <u>In Experimental Psychology</u>. R. S. Woodworth and H. Schlosberg. Holt Rinebart & Winston, New York, N.Y., 1971, pp. 169-191.
- 397. KAPLAN, A. M., M. MANDELS, and M. GREENBERGER. Mode of action of resins in preventing microbial degradation of cellulosic textiles.

  In Biodeterioration of Materials, volume II. A. H. Walters and E. H. Hueck-van der Plas (eds.). Applied Science Publishers, London, England, 1972, pp. 268-278.
- 398. MCCORMICK, N. G., F. FEEHERRY, and H. S. LEVINSON. Germinative properties and proteins of spores of <u>Bacillus megaterium</u> QM I-1551 mutants. <u>In Spores V. H. O. Halvorsen</u>, R. Hanson and L. L. Campbell (eds.). American Society for Microbiology, Washington, D.C., 1972, pp. 421-429.
- 399. MERRITT, C., JR. Applications in flavor research. <u>In Preparative Gas Chromatography</u>. A. Zlatkis and V. Pretorius (eds.). John Wiley & Sons, New York, N.Y., 1971, Chapter 8, pp. 235-276.

## Other Publications (continued)

- 400. MERRITT, C., JR., and C. DIPIETRO. Qualitative analysis of gas chromatographic eluates by means of vapor phase pyrolysis. I. Small molecule pyrograms. <u>In</u> Advances in Chromatography, vol. 10. A. Zlatkis (ed.). University of Houston, Houston, Tex., 1971, pp. 174-176.
- 401. \_\_\_\_\_\_, and D. H. ROBERTSON. Qualitative analysis of gas chromatographic eluates by means of vapor phase pyrolysis.

  II. Classification by set theory. In Advances in Chromatography, vol. 10. A. Zlatkis (ed.). University of Houston, Houston, Tex., 1971, pp. 177-180.
- 402. REESE, E. T., and M. MANDELS. Enzymatic degradation of cellulose and its derivatives. In High Polymers, vol. 5, part 5, Cellulose and Cellulose Derivatives. N. Bikales and L. Segal (eds.). Wiley Interscience, New York, N.Y., 1971, pp. 1079-1094.
- Wood products. In McGraw-Hill Yearbook of Science and Technology, vol. 10. McGraw-Hill, New York, N.Y., 1971, pp. 436-437.

# INDEX TO AUTHORS (Entry Number)

Bustead, R. L. 17, 20, 21, 212, 222, 223 Adams, E. Q. 211 Byrne, R. J. 17, 19, 21, 22, 24, 25, Agarwal, S. R. 108 Akesson, C. 294 26, 27, 28, 29, 212, 223 Anderson, E. E. 5, 7 Anellis, A. 38, 109, 110, 111, 130 Carlin, A. F. 86 Angelini, P. 317, 350 Cavagnaro, J. 383 Arons, G. N. Chalk, R. C. 263, 324, 394 65 Ay, C. 121 Chang, C. 20, 222 Churchill, E. Ayoub, J. A. 131 53, 64 Clapp, R. C. 298 Baile, C. A. 259, 318 Clifford, W. 111 Bailey, L. H. 319 Cohen, J. S. 112 Costanza, F. Ball, D. H. 263, 271, 320 246 Cox, F. A. 213 Barnicle, E. J. 48 Cramer, R. W. 18 Baross, J. A. 117 Bartoshuk, L. M. 396 Cunniff, T. L. 49, 50 Bazinet, M. L. 260, 290, 317, 351 Dastoli, F. R. 264 Bean, S. M. 259, 318 Beatty, G. H. Dateo, G. P., Jr. 221 Behforouz, N. C. Davidsohn, W. 66 Bensel, C. K. 252, 321 Davies, J. M. 47, 266 Berkowitz, D. 110, 131 Decareau, R. V. 224, 225, 226, 227, Bernard, A. M. 51 228, 229, 230, 231, Bishov, S. 122, 132, 188 232, 233, 240, 250 Bissett, F. H. 262 Dias, G. 52 Bluhm, A. L. 261, 322, 323 DiNicola, T. J. 99 Bornstein, J. 61, 82 DiPietro, C. 290, 291, 352, 400 Boziuk, J. S. III 234 Domenico, J. A. 140 Braden, E. A. 106, 129 Drake, B. 294 Branagan, M. T. 133 Dua-Sharma, S. Branch, L. G. 253 Duxbury, D. D. 214 Brandt, D. 134, 179 Breyer, J. B. 235, 236 Effenberger, L. J. 215 Brockmann, M. C. 135 Eklund, C. L. 36, 37 Brown, C. L. 85 E1-Bisi, H. M. 121 Brown, R. H. 67 Elwell, R. A. 36, 37 136, 137, 138, Brynjolfsson, A. Erickson, R. L. 67 139 Ettlinger, M. 300 Burns, F. C. 52 Bushweller, C. H. Faith, W. T. 267 262

Faull, J. R. 268
Feeherry, F. 189, 192, 398
Feitelson, J. 325
Ferguson, W. 80
Figucia, F. 68, 80
Flanagan, J. H. 8, 9, 10, 11, 12
Flores, L. 69, 72
Fourt, L. 54
Fox, M. F. 269
Frederick, E. B. 70
Freese, E. 272
Freeston, W. D., Jr. 239
Fuka, L. R. 41

Ganchrow, D. 326 Garg, D. P. 234 Gee, J. H. 214 202 Giddings, G. G. Giebutowski, E. J. Gingrich, J. B. 327 Glasgow, J. S. 217 66 Goddard, C. M. Gopal, V. 309 Gould, J. W. 87, 113, 160 Greenberger, M. 254, 338, 397 Greenwald, A. 94, 95, 96 Gurney, A. B. 270

Halford, M. H. 271 Halpern, B. P. 268 272 Hampton, M. L. 328 Hanscom, D. R. Hapgood, W. 216 Harlan, J. W. Harris, J. M. 217 Harris, N. E. 89, 141 Hasenzahl, B. 257 Hayashi, N. 273 Hayon, E. 269, 273, 274, 275, 276, 277, 278, 279, 311, 312, 313, 314, 325, 331, 360, 377

Healy, E. M. 71 Heidelbaugh, N. D. 146 Heiligman, F. 108, 114, 142, 202, 203 Heinmets, F. 280, 281, 282, 329 Helmer, R. L. 90 Henick, A. S. 132, 141 Henning, W. L. 188 Henry, M. C. 66, 70 Hertweck, G. 19 Herz, M. L. 55, 56 Hicks, C. L. 106, 129 Hirsch, E. S. 330 Hoffman, M. Z. 283, 299, 310, 331 Hogan, H. D. 52, 67 Hoge, H. J. 332 Hollender, H. A. 115, 116, 135, 143 Hollies, N. R. S. 54 Holmes, L. G. 286, 301 Holz, J. B. 351, 383 Hontz, L. 144, 179 Howeler, W. F. 214 Hsia, S. 145 Hu, K. H. 235, 236, 241 Huber, C. S. 146 Hyatt, M. T. 287

Ibata, T. 273, 279

Jacobs, H. L. 259, 284, 309, 318, 333, 334, 335, 336

Jan, S. F. 43
Jarboe, J. K. 205
Jarrett, R. 147
Jarvi, P. K. 91
Jezek, B. W. 44
Johnson, H. C. 117, 148
Johnson, R. F. Q. 252, 256, 285, 337
Jones, F. 69, 72

Josephson, E. S. 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 208

Kaplan, A. M. 254, 255, 338, 339, 397
Kaplow, M. 204
Kapsalis, J. G. 89, 118, 159, 201
Karel, M. 218
Kauffman, F. L. 88

Kegerreis, J. E. 160, 161 Mandels, G. 343 119, 178, 179, 209, Kemper, D. 110 Mandels, M. 338, 397, 402 Kennedy, S. J. 79 Kenyon, E. M. 87, 113, 131, 160, Mansur, R. T. 251 Maringer, R. E. 221 161, 162 Kiess, H. O. 256, 288 Martin, T. G. 120 Killoran, J. J. 163, 242, 243, 244 Matsumoto, A. 273 Klicka, M. V. 115, 135, 146, 164, Mazzeo, R. A. 59 165, 166, 167, 168, Mehrlich, F. P. 18, 181, 182, 183 Meiselman, H. L. 253, 257, 258, 268, 169, 170 Kluter, R. A. 159 289, 346, 347, 348, Kneeland, L. E. 97 349 260, 290, 291, 292, Kostick, J. 119, 171, 172 Merritt, C., Jr. Krizik, J. 118 308, 317, 350, 351, 352, 353, 354, 355, Kronman, M. J. 286 356, 357, 358, 359, Laible, R. 68, 80 399, 400, 401 Laliberte, B. R. 66 Michl, M. B. Miller, W. N. Lamanna, C. 387 214 Mirabella, A. C. Lampi, R. A. 245, 246 219 Lauback, L. L. 53 Mittal, J. P. 360 Lee, F. H. 173 Mittal, L. P. 360 Lee, Y. S. 125 Moore, K. A. 184, 185 Moskowitz, H. R. 159, 258, 293, 294, Leitch, D. P. 30 Levin, W. B. 2, 3 295, 296, 297, 361, Levinson, H. S. 287, 340, 341, 344, 362, 363, 364, 365, 345, 387, 398 366, 367, 368, 369, Lichtin, N. N. 273, 279 370, 371 Liston, J. 117, 148 Mueller, K. E. Lockhart, J. M. 288, 321 Murrmann, R. P. 120 Losty, T. 124 Long, L., Jr. 263, 265, 271 Nakashima, M. 298, 391 Lovelette, C. A. 342 Nats os, B. A. 71 Luksich, R. B. 174 Naumer, D. A. 60 Luyet, B. J. 92 Nebesky, E. A. 247 Nelson, D. A. 372 Mabrouk, A. F. 175, 176, 177, 205 Neta, P. 299, 312 McCall, W. 189, 192 Neubeck, C. 267 McConville, J. T. 53 Nichols, T. L. 252, 258, 321, 373, McCornaick, N. G. 272, 344, 345, 398 374 Mackenzie, A. P. 92 Nystrom, J. Macnair, R. N. 65, t7 Magdich, E. 213 Ordway, G. B. 237 Maguire, A. 378, 381 Orr, J. P. 213 Mahoney, P. J. 57, 78 Overley, C. A. 91

Am Sel all and

Maire, R. 45, 58

Salunke, D. K. 102, 125, 126, 127 Parizek, R. 119 Sams, P. F. 214 Parks, T. R. 145 Sassaman, W. A. 308, 351 Parrish, F. W. 300, 378, 381 Schafer, G. 98, 99 Paynter, A. L. 213 Schulz, G. L. 237, 251 Perry, J. T., Jr. 87 Secrist, J. L. 193, 194, 195, 196 Pilsworth, M. N. 332 Pollock, W. B. 93 Segars, R. A. 89, 118, 159 Seligsberger, L. 76 Pope, R. E. 13 Porter, W. L. 94, 95, 96 Shafer, H. W. 85 Sharma, K. N. 309 Powers, E. M. 108, 121 Shevlin, R. G. 213 Pratt, G. B. 97 Shimkus, D. F. 39 Prell, P. 98 Shults, G. W. 197, 206, 207 17, 20, 21, 212, 222, Prifti, J. K. Shute, S. J. 46 Sidel, J. 145, 258 Princis, K. 307 Sieling, D. H. 16 Prosser, R. A. 74, 75 Silverman, G. 198, 199, 200 Rahman, A. R. 98, 99, 122, 125, 126, Silverman, S. J. 387 Simic, M. 275, 276, 277, 278, 279, 127, 140, 145, 186, 283, 299, 310, 311, 312, 187, 188 Raisbeck, B. 375, 376 313, 314 Ramsley, A. O. Simmons, E. G. 315 Simpson, C. W. 259, 318 Rao, P. S. 377 Singh, B. 102, 126, 127 Reed, R. I. 302 Reese, E. T. 209, 267, 300, 378, Skelton, J. 238, 239 379, 380, 381, 402, Smith, M. C. 146 Smith, R. S. 17, 18, 20, 21, 23, 31, 403 Rice, L. J. 114, 123 32, 33, 34, 35, 212, Ritter, R. 50 222, 223 Rizzo, F. J. 81 Snygg, B. 192 Roach, J. F. 316, 393 298, 316, 388, 389, Sousa, J. A. 390, 391, 392, 393 Robbins, F. M. 301, 382, 387 Spano, L. A. 394 Roberts, N. 246 292, 302, 353, 359, Robertson, D. H. Stapler, J. T. 61, 74, 82 383, 401 Swanson, J. B. 256 Swift, J. 103, 128 Robertson, J. W. 91 Rogozenski, J. E. 21, 223 Ronsivalli. L. J. 100 Treinin, A. 274, 395 Ross, E. W., Jr. 6, 14, 15 Troisi, F. L. 249 Roth, J. S. 124 Tuomy, J. M. 85, 90, 101, 104, 105, Roth, L. M. 270, 303, 304, 305, 306, 106, 129 307, 384, 385, 386 Rowley, D. B. 101, 110, 121, 130, Van Horne, W. 257 189, 190, 191, 192 Van Lydegraf, D. Rubinate, F. J. 248

Rudnick, A. 217, 221

ووفا المستوع الإيما والمحافظة مكافأت فالمواجعة فيطابهم فالمحافظة فيتماء والمحافظة والمحافظة والمحافظة والمقافظة

52

Wadsworth, C. K. 131

Walker, G. C. 106, 129 Walker, J. E., Jr. 201 Wall, M. A. 112 Walsh, J. T. 394 Wang, D. J. 102, 127 Wehrly, T. 257 Weiner, L. I. 62, 63, 68, 77 Weinstein, J. 261, 322 Wells, F. E. 107 Wells, R. D. 45, 58 Werkowski, S. J. 38, 108 Westcott, D. E. 89, 98, 99, 101, 122, 140, 141, 188 53, 64, 83 White, R. M. Wierbicki, E. 124, 142, 163, 197, 202, 207, 210, 244

Wilf, J. 274
Wilson, A. 78, 84
Winters, R. W. 120
Wise, R. 250
Wogan, G. N. 218
Wolfson, J. 21, 223

Yang, C. C. 102, 126 Yeomans, W. G. 260 Yesowitch, G. E. 262

Zagieboylo, W. 47, 266